

Fig. 1

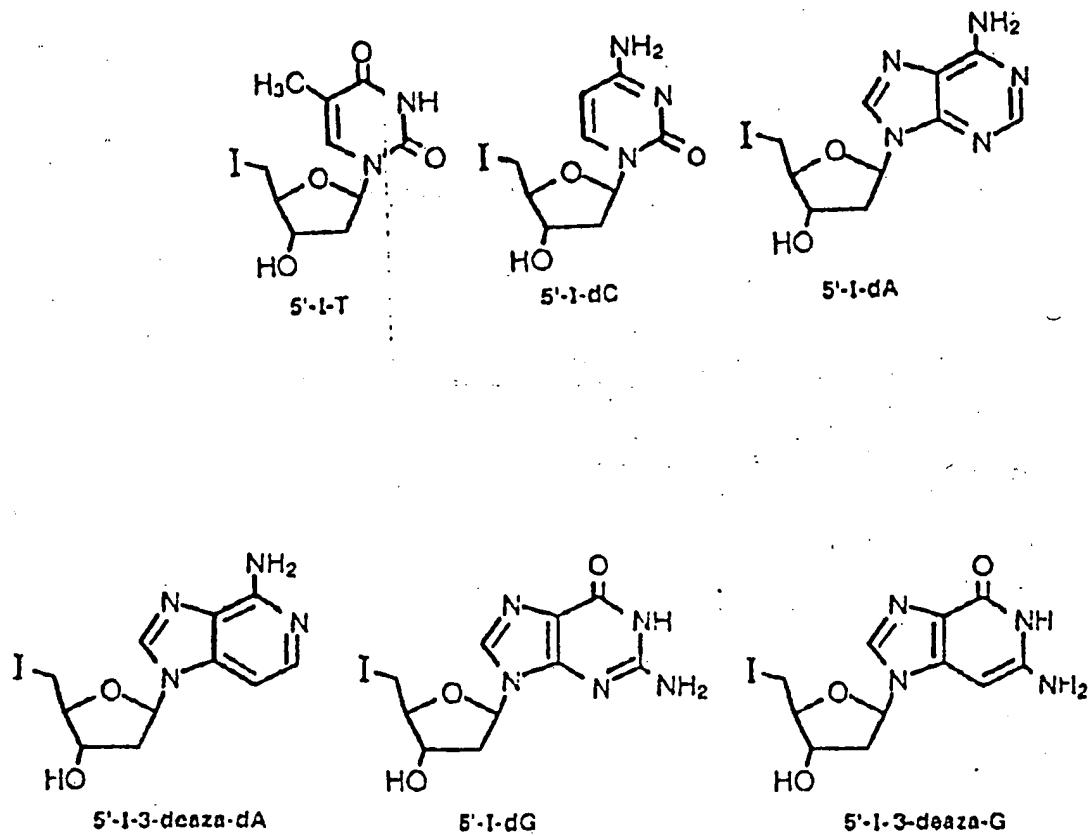
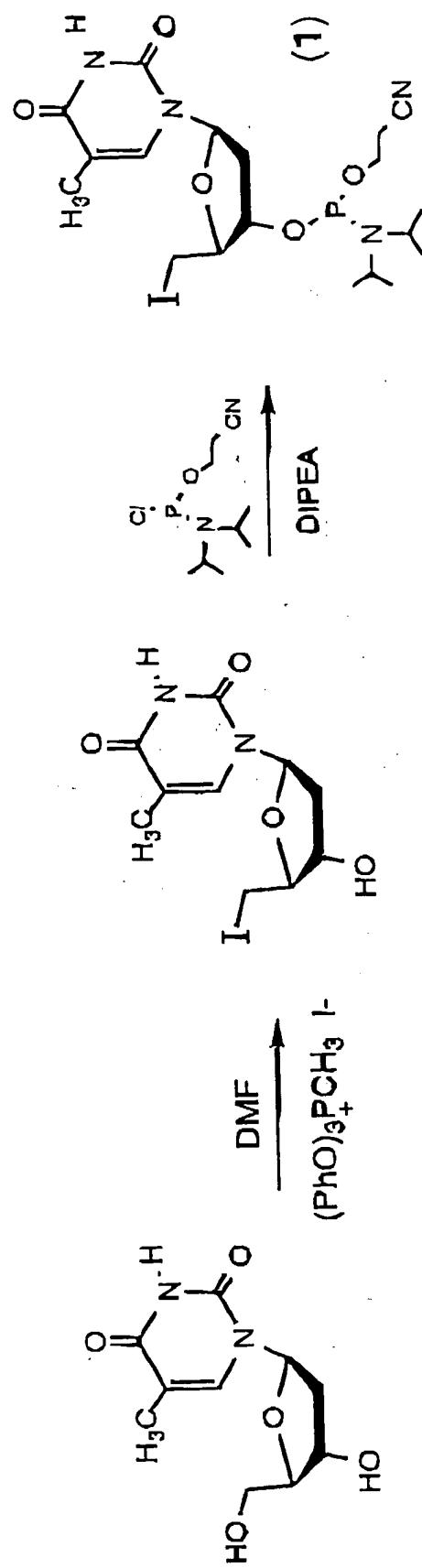


Fig. 2

Fig. 3



(a) ligation of ssDNA

GATCAGGT<sup>S-</sup> + TTACGAGCCTG  
+ CTAGTCCAAAGTGCTCGG



GATCAGGT TTACGAGCCTG

ligation of duplex DNA

T TGTACGCTGGATGCA<sup>S-</sup>  
TTCATGCGACCT + TCCAGCGTACT<sup>T</sup>  
-S ACGTAGGT CGCAT GT<sup>T</sup>



T TGTACGCTGGATGCA TCCAGCGTACT<sup>T</sup>  
TTCATGCGACCT ACGTAGGT CGCAT GT<sup>T</sup>

one pot ligation / cyclization of ssDNA

GTTTATACAAAACCTGGCA  
T CAGCAAAATATGT<sup>S-</sup> TTTGGACCGTTGGT<sup>T</sup>  
C + T CTGCTTCAGT<sup>S-</sup> TCAGGAGACTGTTCA<sup>G</sup>  
AGTGATCAAGTCCTCTGA



T CAGCAAAATATGT TTTGGACCGTTGGT<sup>T</sup>  
C + T CTGCTTCAGT TCAGGAGACTGTTCA<sup>G</sup>

(b)

<u>rxn. type</u>	<u>conversion</u>	<u>isolated yield</u>
ssDNA ligation	>90%	44%
duplex ligation	75%	36%
ligation/cyclization	>90% (1st step) 50% (2nd step)	20%

Fig. 4

exonuclease / hydrolysis susceptibility

5'-GATCAGGT<sub>p,T</sub>T CACGAGCCTG-3'

endonuclease susceptibility

T T GTACGCTGGATGCA<sub>p,T</sub>CCAGCGTACT T  
T T CATGCGACCT<sub>p,A</sub>CGT AGGTCGCATG T T

template for replication / transcription

5'-TAATACGACTCACTATA

3'-ATTATGCTGAGTGATATCCTGCCTATTCCGAGCACTT<sub>p,T</sub>GGACTAG

Fig. 5

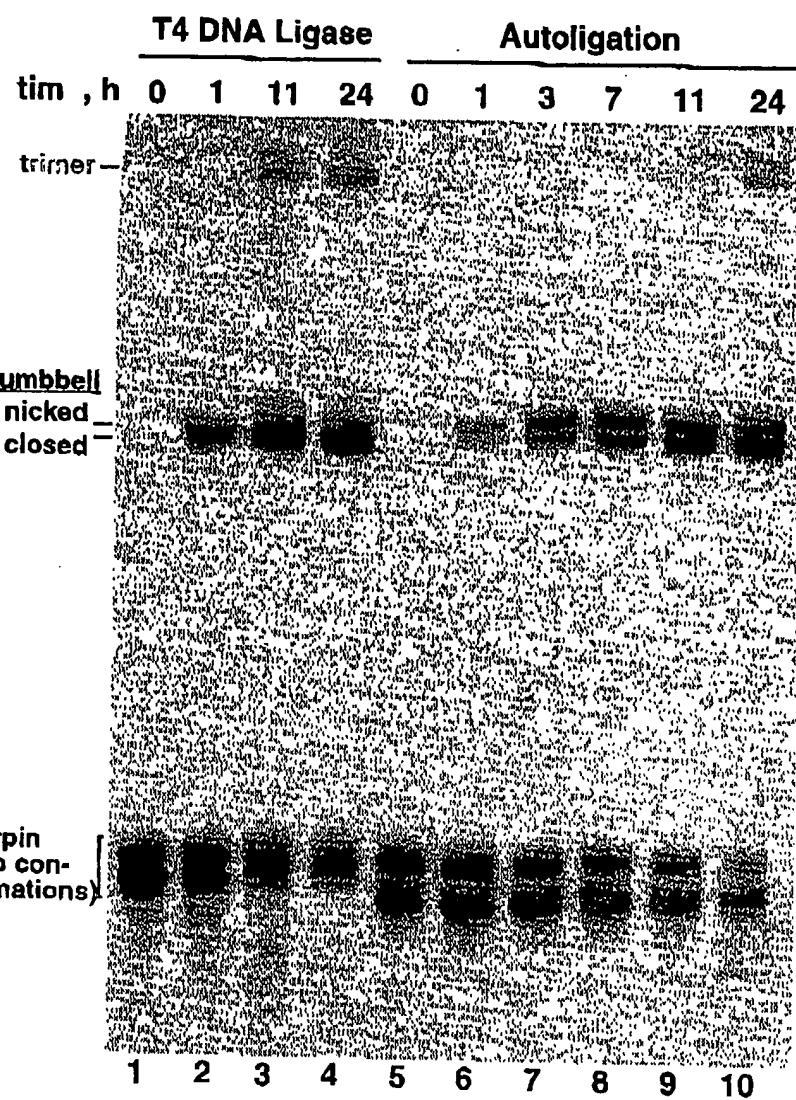


Fig. 6

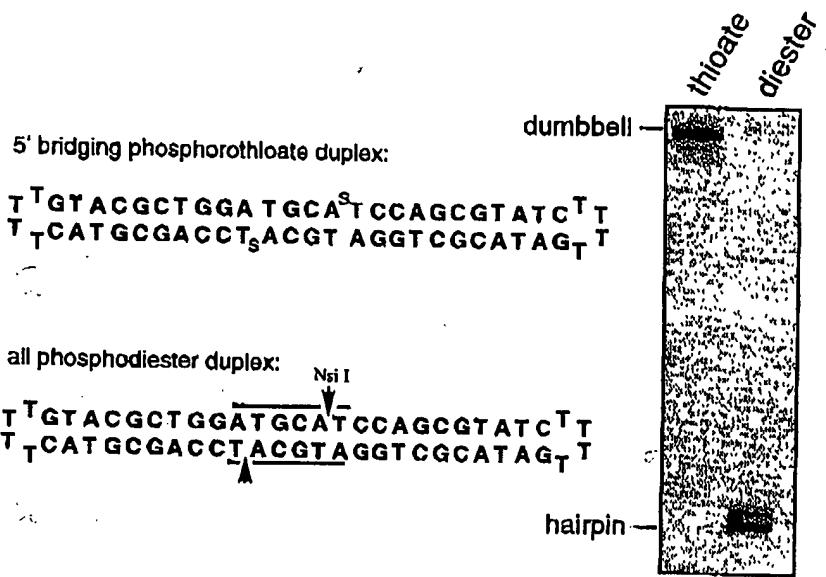


Fig. 7

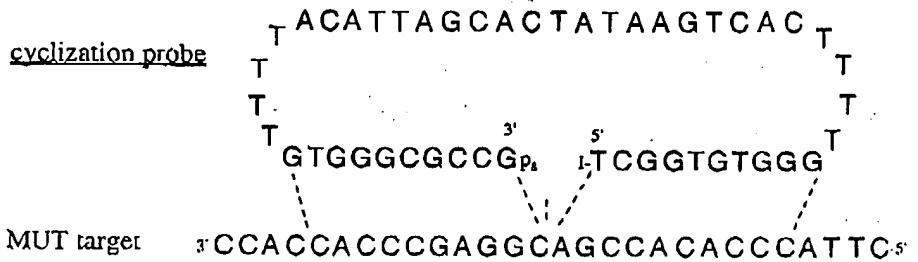
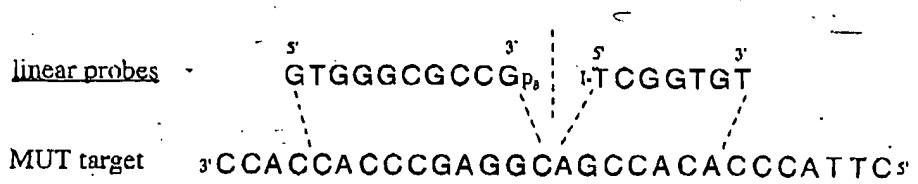


Fig. 8

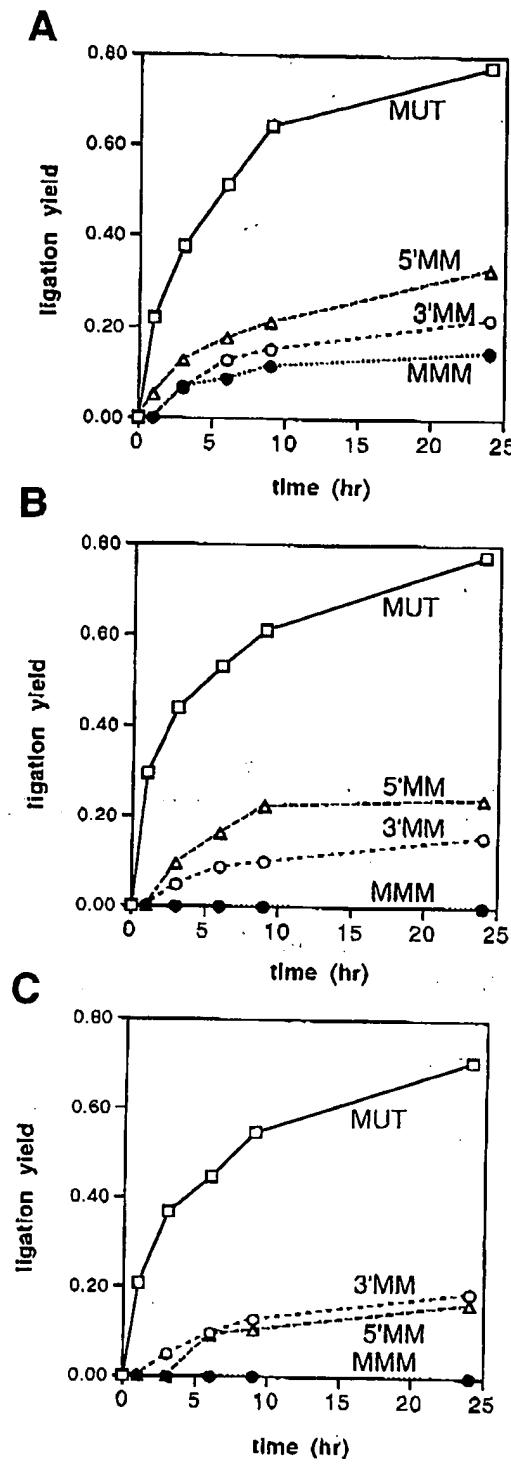


Fig. 9

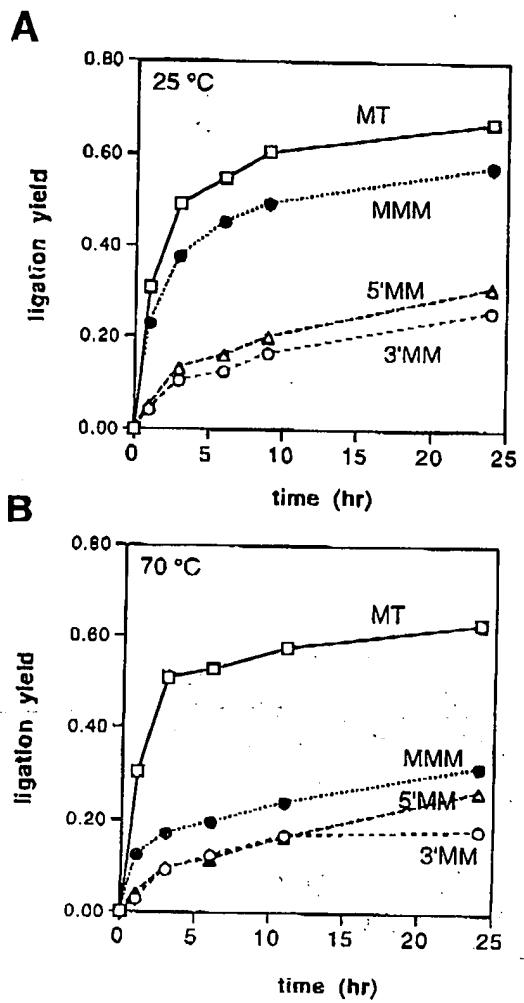
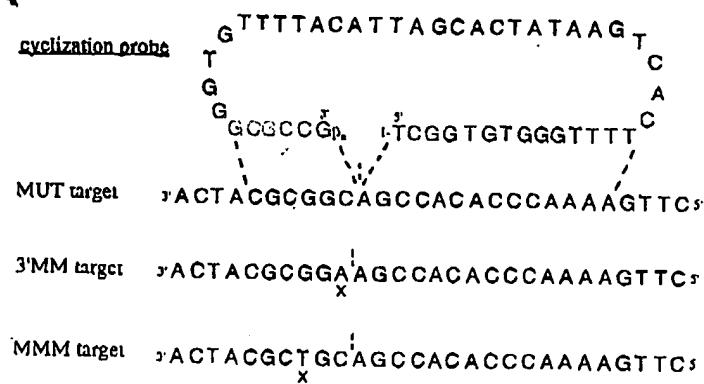


Fig. 10

**A**



**B**

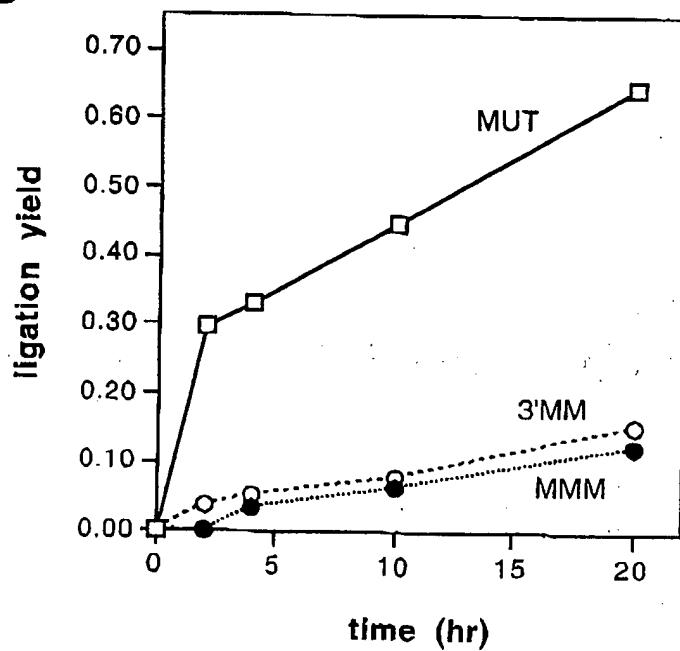


Fig. 11

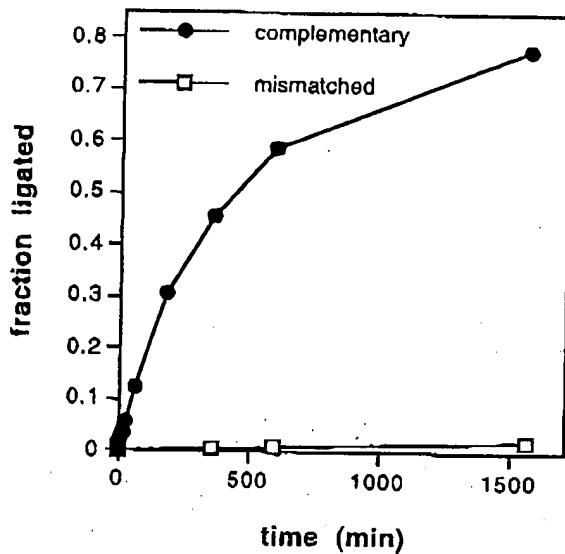
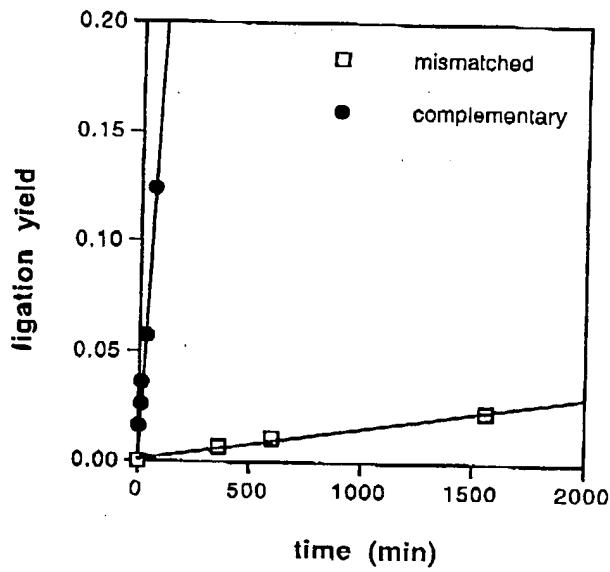
**A****B****C**

Fig. 12

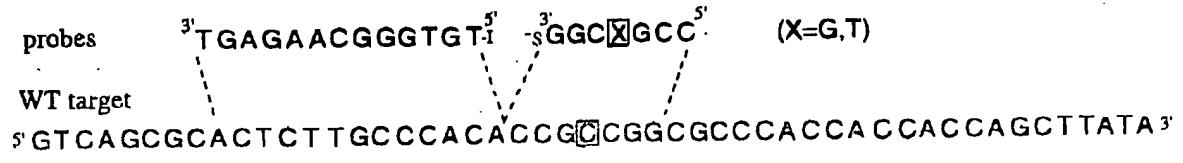


Fig. 13

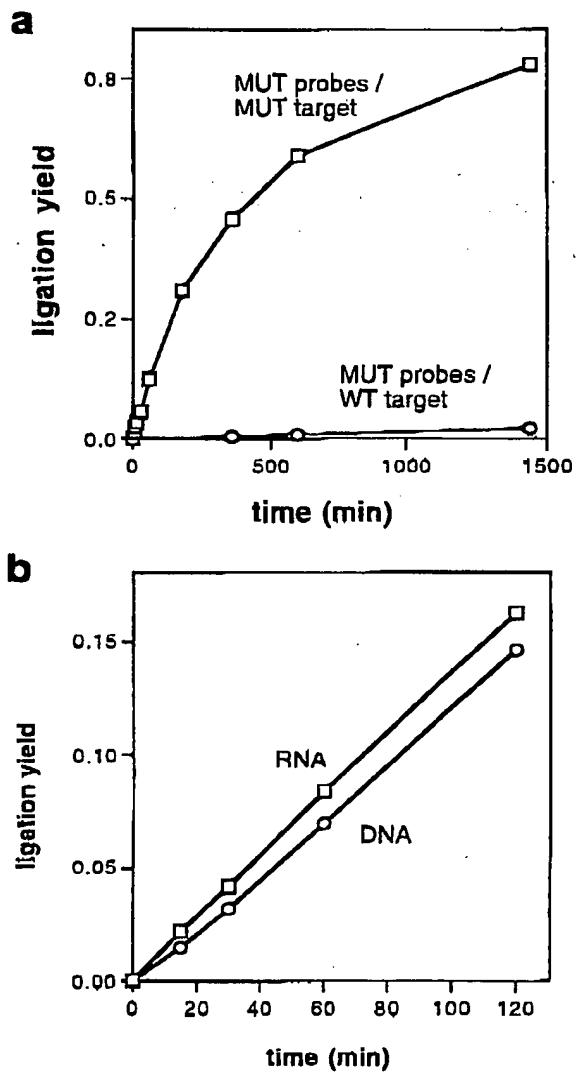


Fig. 14

(a)

temperature (°C)	[target] (nM)	fold turnover	
		no cycling <sup>a</sup>	cycling <sup>b</sup>
22	1	24	--
	10	1.6	1.0
	100	1.0	1.0
27	1	13	14
	10	1.6	3.0
	100	1.2	1.2
32	1	40	51
	10	4.6	4.7
	100	2.3	2.3
37	1	30	44
	10	5.9	6.2
	100	2.2	2.2

<sup>a</sup>Simple incubation of 10 μM probes with target for 24 hr followed by gel electrophoresis and quantitation of ligated product.

<sup>b</sup>24 hr of thermal cycling (30 min at temp. shown followed by 45 sec at 95 °C).

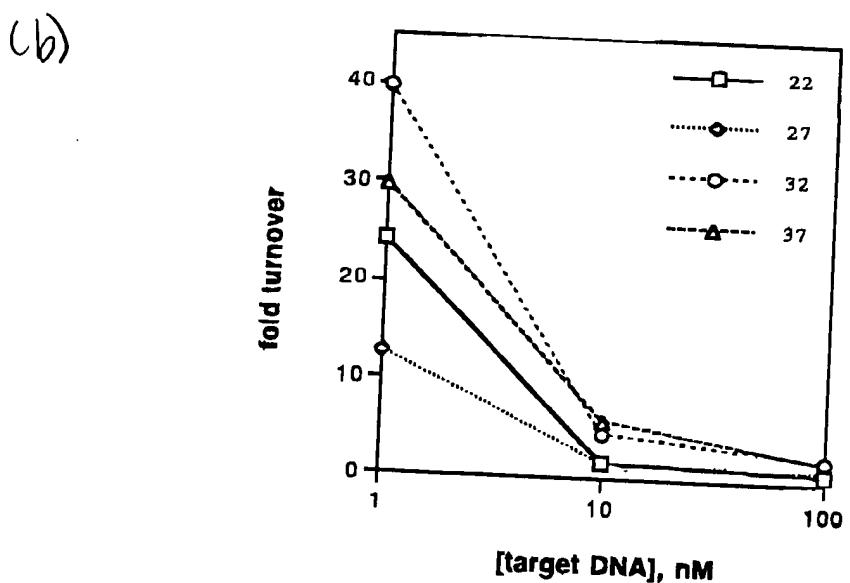


Fig. 15

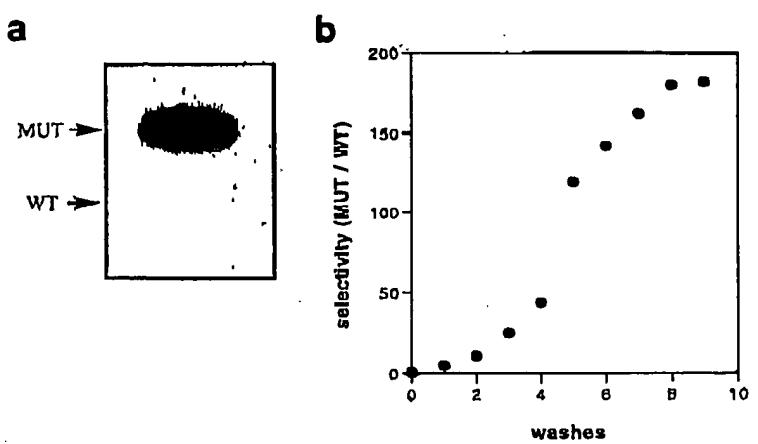


Fig. 16

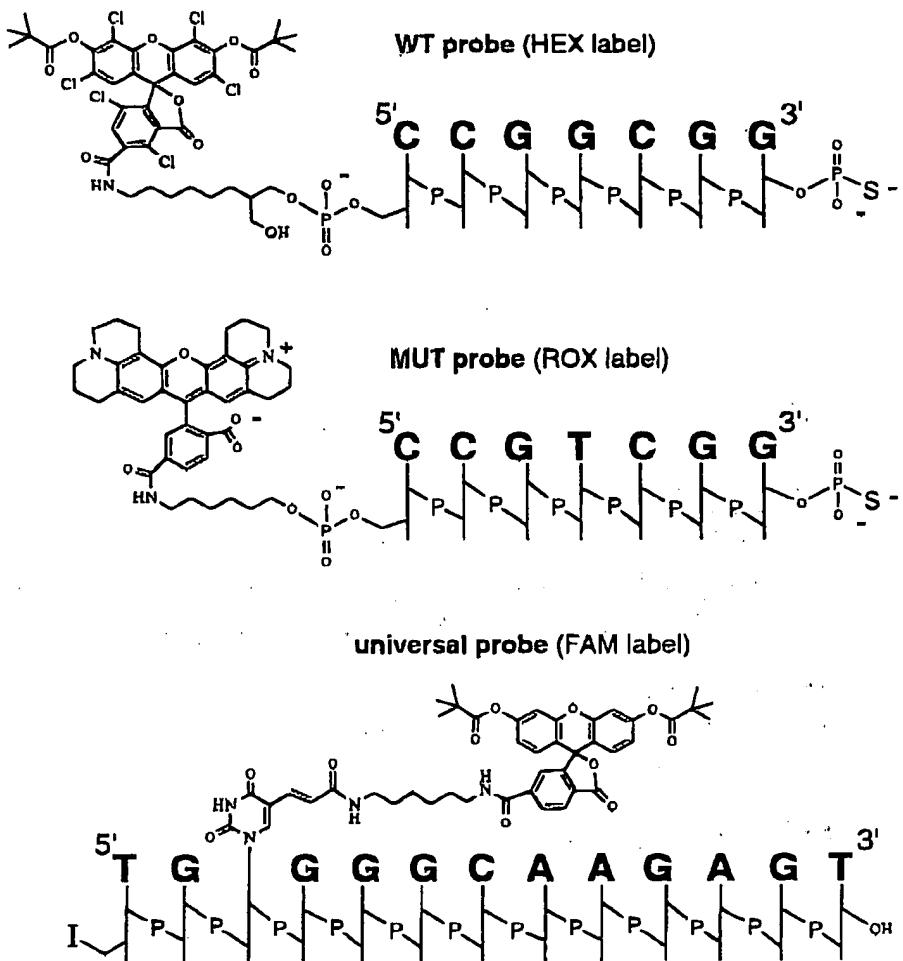


Fig. 17

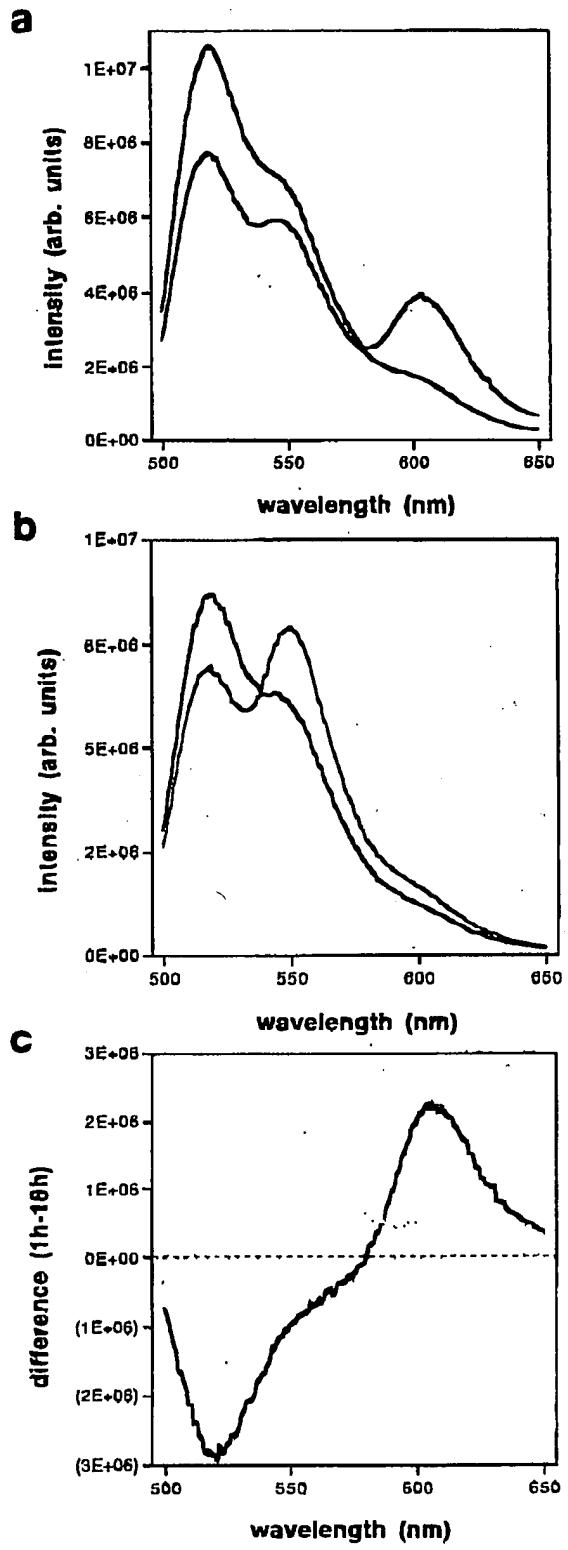


Fig. 18

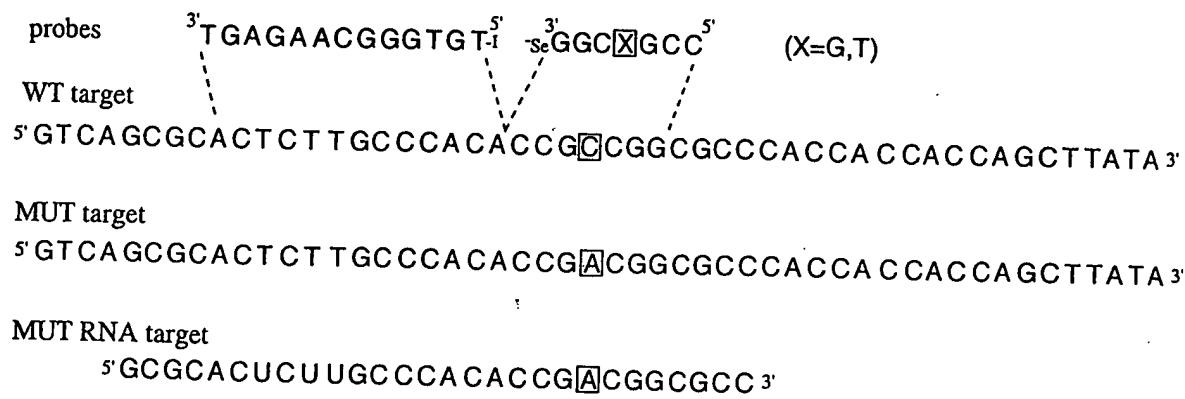


Fig. 19

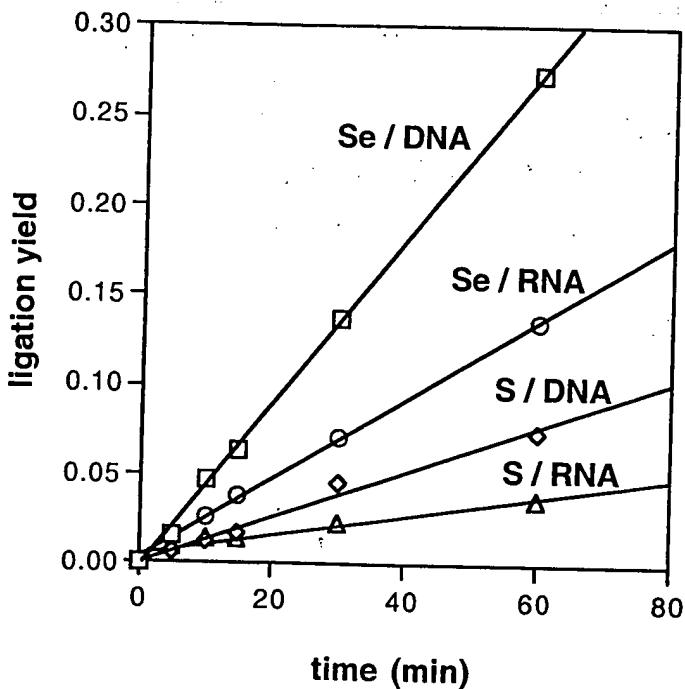


Fig. 20

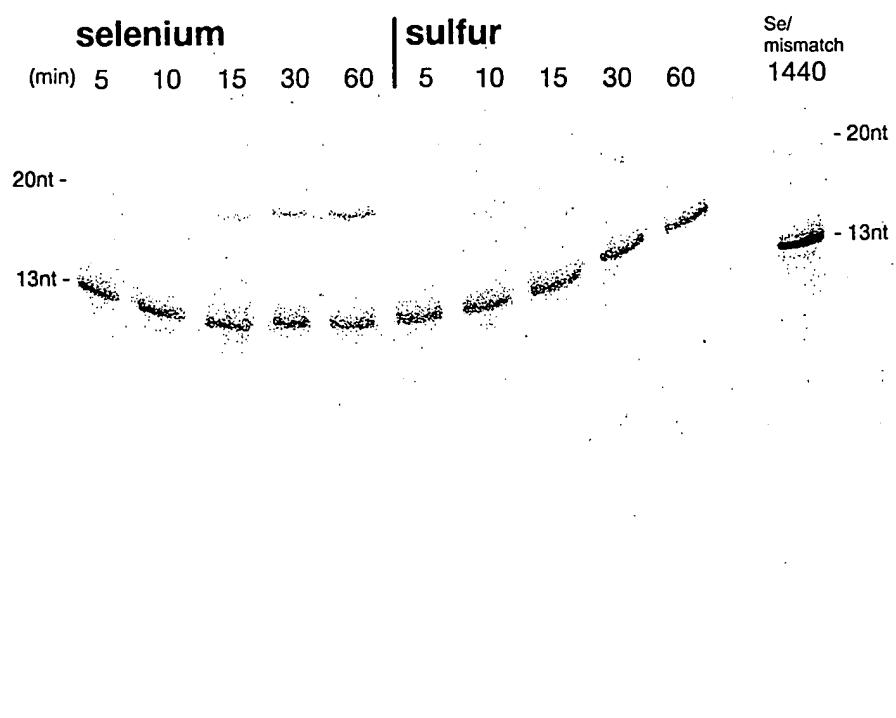


Fig. 21